

What is claimed is:

1. A wireless communication system for performing communication within a frequency region divided into a plurality of frequency bands, comprising:

5 searching means for searching idle frequency bands which are not used by other wireless communication systems;

 band allocating means for allocating a frequency band having a predetermined bandwidth to be used by
10 the wireless communication system from among the idle frequency bands detected by said searching means; and

 band adjusting means for adjusting the bandwidth to be occupied by the wireless communication system or any of the other wireless communication systems when
15 said band allocating means cannot allocate the frequency band, and causing said band allocating means to perform reallocation of the frequency band.

2. A wireless communication system according to claim 1, wherein

20 said searching means searches reference frequencies of the frequency bands used by the other wireless communication systems and specifies reference frequencies each remaining in an idle state within said frequency region, and

25 said band allocating means allocates the

frequency band to be used by the wireless communication system within an idle frequency band composed of a group of the idle state reference frequencies adjacent to each other.

5 3. A wireless communication system according to claim 1, wherein said searching means determines main frequencies of the frequency bands being used by the other wireless communication systems, inquires about frequency band information on the bands being used by
10 the other wireless communication systems according to each of radio signals at said main frequencies, and specifies reference frequency bands in an idle state based on the frequency band information obtained from the other wireless communication systems.

15 4. A wireless communication system according to claim 1, wherein said band adjusting means reduces said predetermined bandwidth and performs the allocation of the frequency band to be used by the wireless communication system.

20 5. A wireless communication system according to claim 4, further comprising means for preliminarily holding plural types of spreading codes with different chip rates in correspondence with occupied bandwidths, wherein

25 said band adjusting means performs the allocation

of the band reduced by selecting any of said spreading codes.

6. A wireless communication system according to claim 1, wherein

5 said band adjusting means enlarges an idle frequency bandwidth by shifting main frequencies of the frequency bands being used by the other wireless communication systems searched by said searching means and causes said band allocating means to perform
10 reallocation of the frequency band to be used by the wireless communication system.

7. A wireless communication system according to claim 6, wherein said band adjusting means determines the main frequency of the frequency bands being used
15 by one of the other wireless communication systems and enlarges the idle frequency bandwidth by requesting said one of the other wireless communication systems by using a radio signal having the main frequency to shift the main frequency of the frequency band being
20 in use.

8. A wireless communication system according to claim 1, wherein said band adjusting means determines a main frequency of the frequency band being used by one of the other wireless communication systems, and
25 enlarges the idle frequency bandwidth by requesting

said one of the other wireless communication systems by using a radio signal having the main frequency to reduce the bandwidth being in use.

9. A wireless communication system for performing
5 communication within a frequency region divided into a plurality of frequency bands, comprising:

a server radio station connected to a wired LAN for performing wireless communication with a plurality of client terminals and mediating communication
10 between the individual client terminals or between each of the client terminals and the wired LAN, said server radio station having a memory for storing frequency band information indication radio frequency bands being used by the wireless communication system and
15 other wireless communication systems; and

a server management terminal for controlling allocation of the frequency band to be used by the wireless communication system based on said frequency band information.

20 10. A wireless communication system according to claim 9, wherein

said frequency band information memory includes idle band information indicative of the frequency bands which are not used by the other adjacent wireless
25 communication systems, and

said server management terminal performs the allocation of the frequency band to be used by the wireless communication system by referring to said idle band information.

5 11. A wireless communication system according to claim 9, wherein

said frequency band information memory indicates main frequencies of the frequency bands and occupied bandwidths being used by the plurality of the other
10 wireless communication systems, and

said server management terminal performs the allocation of the band to be used by the wireless communication system by referring to said frequency band information.

15 12. A wireless communication system according to claim 11, wherein said server management terminal has means for designating a communication speed for the wireless communication system and sets the occupied bandwidth of the frequency band to be used by the
20 wireless communication system in accordance with said designated value.

13. A wireless communication system according to claim 11, wherein said server management terminal has means for requesting a server management terminal of
25 any of the adjacent wireless communication systems to

change a frequency band being in use when the frequency band cannot be allocated to the wireless communication system, and performs the allocation of the frequency to be used by the wireless communication system based on the frequency band information that has been changed.

14. A wireless communication system according to claim 13, wherein said server management terminal has means for searching a frequency band being used by any of the other adjacent wireless communication systems and allocating the searched frequency band to said server radio station so that the server management terminal performs communication with a server management terminal of the other adjacent wireless communication system.

15 15. A wireless communication system according to claim 11, wherein said server management terminal has means for correcting the width of the frequency band to be used by the wireless communication system when the frequency band cannot be allocated to the wireless communication system, thereby to perform reallocation of the frequency band to the wireless communication system with the corrected bandwidth.

16. A wireless communication system according to claim 9, wherein said server management terminal performs has control means for shifting a main frequency

of the frequency band being used by the wireless communication system or reducing an occupied bandwidth and updating the frequency band information on the wireless communication system in said frequency band information memory when it is requested to change the frequency band from a server management terminal of any of the other adjacent wireless communication systems.

17. A wireless communication system according to claim 16, wherein said control means notifies a client terminal connected to said server radio station of the change in the frequency band when the frequency band information on the wireless communication system is updated.

18. A wireless communication system according to claim 9, wherein said server management terminal performs the allocation of the band such that the frequency bands used by the wireless communication system and a plurality of the other wireless communication systems are not adjacent to each other.

19. A method for allocating a frequency band of a wireless communication system, the method comprising the steps of:

searching, within a predetermined frequency region divided into a plurality of frequency bands

having different reference frequencies with each other,
the reference frequencies currently used by other
wireless systems located in the surroundings and
creating a reference frequency table indicative of
5 relationships between the reference frequencies and
use situations thereof;

acquiring information on an occupied bandwidth
in use from each of the other wireless communication
systems located in a communicative range and creating
10 a band-in-use management table indicative of a
relationship between the occupied bandwidth and a main
frequency thereof for each of the wireless
communication systems;

creating an idle band management table indicative
15 of relationships between groups of idle state reference
frequencies adjacent to each other and idle frequency
bands composed of the respective groups of the idle
state reference frequencies based on said reference
frequency table and said band-in-use management table;
20 and

detecting one of the idle frequency bands adapted
to an occupied band to be allocated to the wireless
communication system from said idle band management
table, and deciding a main frequency of said occupied
25 band from among the reference frequencies in the

detected idle frequency band.

20. A method according to claim 19, further comprising the step of narrowing the width of the occupied band to be allocated if the width of the
5 occupied band is changeable when there is no idle frequency band adapted to the occupied band, wherein an idle frequency band adapted to the narrowed occupied band is detected in said main frequency deciding step.